

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-290274

(43)Date of publication of application : 27.10.1998

(51)Int.Cl.

H04M 1/00

H04M 1/21

(21)Application number : 09-097264

(71)Applicant : MIYAMA REI

(22)Date of filing : 15.04.1997

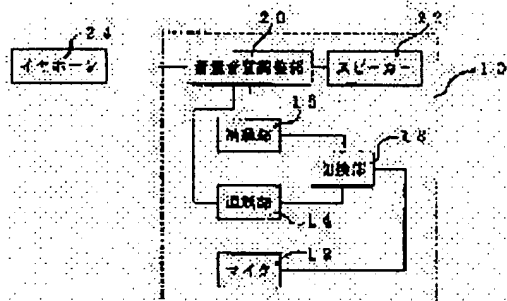
(72)Inventor : MIYAMA REI

## (54) PORTABLE TELEPHONE SET WITH HEARING AID FUNCTION

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide the portable telephone set with a hearing aid function especially useful for aged persons having difficulty in hearing and audibly handicapped persons.

**SOLUTION:** In the case of using the telephone set as a hearing aid, a changeover section 18 is selected to act a hearing aid section 16. When the changeover section 18 is switched as above, a sound picked up by a microphone 12 is given to the hearing aid section 16 via the changeover section 18, where the sound is amplified and outputted to a sound volume sound quality adjustment section 20. On the other hand, in the case of using the telephone set for the telephone set itself, the changeover section 18 is selected to activate a speech section 14. When the changeover section 18 is switched as above, its own voice is picked up by the microphone 12 and sent via the speech section 14. Furthermore, the voice from the opposite party is amplified by the speech section 14 and adjusted for the sound volume or the like at the sound volume sound quality adjustment section 20 and sounded from a speaker 22 or an earphone 24.



### LEGAL STATUS

[Date of request for examination]

12.04.2004

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

**\* NOTICES \***

**JPO and NCIPi are not responsible for any damages caused by the use of this translation.**

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

**CLAIMS**

---

**[Claim(s)]**

[Claim 1] The portable telephone with a hearing aid function characterized by adding the hearing aid function to assist the portable telephone concerned with a hearing impairment person in the portable telephone in which the message with an other station is possible by wireless.

[Claim 2] The portable telephone with a hearing aid function characterized by having the means for switching which chooses any of the message means as which the portable telephone concerned is operated as original telephone in the portable telephone in which the message with an other station is possible by wireless, the hearing aid means as which the telephone concerned is operated as hearing aid with which a hearing impairment person is assisted, and the message means and the hearing aid means concerned are operated.

[Claim 3] In being chosen by said means for switching and being under message, said message means The sound signal and the received sound signal from the microphone built in said telephone are amplified. It is what is outputted to the loudspeaker or earphone built in the telephone concerned. Said hearing aid means The portable telephone with a hearing aid function according to claim 2 characterized by being what amplifies the sound signal from the microphone concerned and outputted to the earphone concerned when chosen by said means for switching.

[Claim 4] Said means for switching is a portable telephone with a hearing aid function according to claim 2 characterized by being what automatically switched to said message means from said hearing aid means as said message means functions when arrival of the mail has been recognized, or when it is under message while switching so that said hearing aid means may usually be operated.

---

**[Translation done.]**

**\* NOTICES \***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

**DETAILED DESCRIPTION**

---

**[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]** This invention relates to a useful portable telephone with a hearing aid function especially at the old person to whom the lug stopped being able to be audible easily, and a hearing impairment person.

**[0002]**

**[Description of the Prior Art]** The spread of the facilities [ without choosing a location in recent years ] that it can talk over the telephone to portable telephones is remarkable. For this reason, development of a small lightweight portable telephone is furthered that it is easy to employ each company.

**[0003]**

**[Problem(s) to be Solved by the Invention]** However, since development of such each company is performed supposing the healthy person, it must be said that development of the portable telephone the old person who cannot hear a lug easily, and for hearing impairment persons is behind though regrettable.

**[0004]** In the portable telephone with which user-friendliness was developed for the healthy person so that often, it cannot be said that it is never easy to use for a hearing impairment person.

**[0005]** Although it is possible such for hearing impairment persons to enlarge sound volume of the loudspeaker of a portable telephone, only by only enlarging, privacy cannot be protected and it may also become others' trouble.

**[0006]** Near rapid increase of future old-man population is expected. Therefore, it can be said that development of the portable telephone the old person who cannot hear a lug easily, and for hearing impairment persons is pressing need.

**[0007]** So, in this invention, it prepares for future need, and even if it is a hearing impairment person, it aims at offer of a useful portable telephone.

**[0008]**

**[Means for Solving the Problem]** In order to attain the above-mentioned purpose, it constitutes from this invention as follows.

**[0009]** Invention according to claim 1 is a portable telephone with a hearing aid function characterized by adding the hearing aid function to assist the portable telephone concerned with a hearing impairment person in the portable telephone in which the message with an other station is possible by wireless.

**[0010]** Thus, if a hearing aid function is added, the voice of the partner under message can be caught without making others trouble, and it will become possible to telephone completely like a healthy person.

**[0011]** Invention according to claim 2 is a portable telephone with a hearing-aid function characterized by to have the means for switching which chooses any of the message means as which the portable telephone concerned is operated as original telephone in the portable telephone in which the message with an other station is possible by wireless, the hearing-aid means as which the telephone concerned is operated as hearing aid with which a hearing impairment person is assisted, and the message means and

the hearing-aid means concerned are operated.

[0012] If it is such a configuration, since a message means or a hearing aid means can be switched by the means for switching, a portable telephone can be switched to two functions by switching to a message means again at arbitration by switching to a hearing aid means using it as hearing aid to function as telephone.

[0013] Of course, the voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0014] Invention according to claim 3 is set to a portable telephone with a hearing aid function according to claim 2. Said message means In being chosen by said means for switching and being under message The sound signal and the received sound signal from the microphone built in said telephone are amplified. When it outputs to the loudspeaker or earphone built in the telephone concerned and said hearing aid means is chosen by said means for switching, it is characterized by being what amplifies the sound signal from the microphone concerned and is outputted to the earphone concerned.

[0015] By therefore, actuation which a hearing impairment person attaches an earphone and switches a message means or a hearing aid means by the means for switching As telephone which can catch a partner's voice through an earphone In being able to operate portable telephone now on the other hand as hearing aid which can catch external voice etc. through an earphone and making it function as telephone The voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0016] Invention according to claim 4 is characterized by said means for switching being what is automatically switched to said message means from said hearing aid means, as said message means functions when arrival of the mail has been recognized, or when it is under message while switching so that said hearing aid means may usually be operated in a portable telephone with a hearing aid function according to claim 2.

[0017] Since a means for switching operates a message means automatically when you are going to telephone, or when a message is received, very user-friendly telephone can be realized.

[0018]

[Embodiment of the Invention] Below, the operation gestalt of this invention is explained at a detail based on a drawing. Drawing 1 is the block diagram showing the outline configuration concerning the gestalt of operation of the 1st of the portable telephone with a hearing aid function of this invention.

[0019] The microphone 12 shared also when using for the body 10 of a portable telephone as telephone and using for it as hearing aid, the message section 14 which operates when making it function as telephone, and the hearing aid section 16 which operates when making it function as hearing aid are formed. It is switched by the change-over section 18 any of the message section 14 and the hearing aid section 16 are operated.

[0020] The sound-volume tone-quality controller 20 can adjust now the sound volume and tone quality of a loudspeaker 22 and an earphone 24 independently, respectively, and can choose the sound volume and tone quality which a hearing impairment person tends to catch. When using especially the portable telephone with a hearing aid function of this invention as hearing aid, a really required sound (human being's voice) is hard coming to catch the sound of all the frequency bands collected with the microphone 12 in bustle (for example, inside of the home of a station, or a big crossing) by having amplified uniformly. Therefore, no matter it may be what location, it is made for the sound of a 1000Hz - about 5000Hz band to become large, and enables it to adjust the sound of other bands so that it may become smaller than the sound of this frequency band so that conversation may be made easily.

[0021] When the message section 14 is functioning, volume control etc. is carried out by the sound-volume tone-quality controller 20, and the voice amplified in the message section 14 is outputted to a loudspeaker 22 or an earphone 24. In addition, if an earphone 24 is inserted in the condition that the message section 14 is functioning, voice will no longer be automatically outputted from a loudspeaker 22.

[0022] For example, in using telephone as hearing aid, it switches the change-over section 18 so that the hearing aid section 16 may function. Thus, if it switches, the sound collected with the microphone 12

will be inputted into the hearing aid section 16 through the change-over section 18, will be amplified here, and will be outputted to the sound-volume tone-quality controller 20. On the other hand, in using telephone as telephone, it switches the change-over section 18 so that the message section 14 may function. Thus, if it switches, a sound will be collected with a microphone 12 and its voice will be transmitted through the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and the voice from a partner is outputted to a loudspeaker 22 or an earphone 24.

[0023] Therefore, that what is necessary is just to switch the change-over section 18 so that the message section 16 may function, and to draw out the earphone 24 from the body 10 of telephone when a healthy person uses the portable telephone of this invention, when a hearing impairment person uses it conversely, actuation which attaches an earphone 24 and switches the change-over section 18 if needed must be carried out.

[0024] In addition, the change-over section 18 is formed in the body of telephone with the gestalt of a transfer switch, and a user may be made to switch it to arbitration if needed, and when the communications department 14 has recognized the arrival of a telephone, or when using telephone (when a call sound specifically sounds), you may make it switch it to the message section 18 from the hearing aid section 16 automatically (when for a key switch to specifically be operated). If it does in this way, user-friendliness will improve. Furthermore, the two above-mentioned functions are doubled and given as a function of the change-over section 18, and the switch for a manual automatic mode change-over which switches whether which function is used may be formed.

[0025] Drawing 2 is the block diagram showing the outline configuration concerning the gestalt of operation of the 2nd of the portable telephone with a hearing aid function of this invention. This portable telephone makes wireless between the body 10 of a portable telephone, and earphones 24.

[0026] With this block diagram, the point that the voice which formed the transmitting section 30 in the body 10 of a portable telephone, and was different at the point which has added receive section 24A to the earphone 24 as compared with the block diagram of drawing 1, and was amplified by the change-over condition (switch the object for healthy persons and for hearing impairment persons) of the change-over section 18 is made to be outputted only to the transmitting section 30 only the loudspeaker 22 is different.

[0027] In using the telephone of such a configuration as hearing aid, while switching the change-over section 18 to the mode which a hearing impairment person uses, it switches so that the hearing aid section 16 may function. Thus, if it switches, it is inputted into the hearing aid section 16 through the change-over section 18, it is amplified here and outputted to the sound-volume tone-quality controller 20, and it will be transmitted towards an earphone 24 through the transmitting section 30, it will be received by receive section 24A, and the sound collected with the microphone 12 will be outputted to an earphone 24.

[0028] On the other hand, in using telephone as telephone, it switches the change-over section 18 so that the message section 14 may function. Thus, if it switches, a sound will be collected with a microphone 12 and its voice will be transmitted through the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and it is transmitted towards an earphone 24 through the transmitting section 30, it is received by receive section 24A, and the voice from a partner is outputted to an earphone 24 again.

[0029] therefore, when a healthy person uses this portable telephone While switching the change-over section 18 to the mode which a healthy person uses, when a hearing impairment person uses it conversely that what is necessary is just to switch so that the message section 14 may function While switching the change-over section 18 to the mode which a hearing impairment person uses, actuation which switches the change-over section 18 so that the hearing aid section 16 may function, and so that the message section 14 may function must be carried out if needed.

[0030] In addition, the switch whose change-over section 18 switches the mode for a healthy person and a hearing impairment person to the body of telephone, Two transfer switches of the transfer switch as which the message section 14 or the hearing aid section 16 is operated alternatively are prepared. When

a user may be made to switch to arbitration if needed and it is switched to a hearing impairment person's mode When the communications department 14 has recognized the arrival of a telephone, or when using telephone (when a call sound specifically sounds), you may make it switch to the message section 18 from the hearing aid section 16 automatically (when for a key switch to specifically be operated). If it does in this way, user-friendliness will improve. Furthermore, the two above-mentioned functions are doubled and given as a function of the change-over section 18, and the switch for a manual automatic mode change-over which switches whether which function is used may be formed.

[0031] Drawing 3 is the block diagram showing the outline configuration concerning the gestalt of operation of the 2nd of the portable telephone with a hearing aid function of this invention. This portable telephone enables it to also carry out a message of a hearing impairment person through the message microphone (bone conduction microphone) built in the earphone while making wireless between the body 10 of a portable telephone, and earphones 24.

[0032] With this block diagram, the point that the voice which formed the transceiver section 35 in the body 10 of a portable telephone, and was different as compared with the block diagram of drawing 1 at the point which has add receive section 24A, transmitting section 24B, and message microphone 24C to the earphone 24, and was amplified by the change-over condition (switch the object for healthy persons and for hearing impairment persons) of the change-over section 18 is made to be output only to the transceiver section 35 only the loudspeaker 22 is different.

[0033] In using the telephone of such a configuration as hearing aid, while switching the change-over section 18 to the mode which a hearing impairment person uses, it switches so that the hearing aid section 16 may function. Thus, if it switches, it is inputted into the hearing aid section 16 through the change-over section 18, it is amplified here and outputted to the sound-volume tone-quality controller 20, and it will be transmitted towards an earphone 24 through the transceiver section 35, it will be received by receive section 24A, and the sound collected with the microphone 12 will be outputted to an earphone 24.

[0034] On the other hand, in using telephone as telephone, it switches the change-over section 18 so that the message section 14 may function. Thus, if it switches, a sound will be collected by message microphone (bone conduction microphone) 24C built in the earphone 24, and its voice will be transmitted through transmitting section 24B, the transceiver section 35, and the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and it is transmitted towards an earphone 24 through the transmitting section 30, it is received by receive section 24A, and the voice from a partner is outputted to an earphone 24 again.

[0035] therefore, when a healthy person uses this portable telephone While switching the change-over section 18 to the mode which a healthy person uses, when a hearing impairment person uses it conversely that what is necessary is just to switch so that the message section 16 may function While switching the change-over section 18 to the mode which a hearing impairment person uses, actuation which switches the change-over section 18 so that the hearing aid section 16 may function, and so that the message section 14 may function must be carried out if needed.

[0036] When are switched to the mode for hearing impairment persons in the case of this telephone, and using as telephone, the microphone 12 and loudspeaker 22 which are formed in the body 10 of a portable telephone are not used at all, but when switched to the mode for healthy persons, a microphone 12 and a loudspeaker 22 are used.

[0037] In addition, the switch whose change-over section 18 switches the mode for a healthy person and a hearing impairment person to the body of telephone, Two transfer switches of the transfer switch as which the message section 14 or the hearing aid section 16 is operated alternatively are prepared. When a user may be made to switch to arbitration if needed and it is switched to a hearing impairment person's mode When the communications department 14 has recognized the arrival of a telephone, or when using telephone (when a call sound specifically sounds), you may make it switch to the message section 18 from the hearing aid section 16 automatically (when for a key switch to specifically be operated). If it does in this way, user-friendliness will improve. Furthermore, the two above-mentioned functions are

doubled and given as a function of the change-over section 18, and the switch for a manual automatic mode change-over which switches whether which function is used may be formed.

[0038] Drawing 4 is the case where the change-over section 18 is switched to the mode for hearing impairment persons, and although the change-over section 18 switches automatically the message section 14 and the hearing aid section 16 further, it is a flow chart which shows actuation.

[0039] When the arrival of a telephone has been recognized, or except when it is going to carry out the telephone, it switches so that the change-over section 18 may function the hearing aid section 16. Thus, if switched, the sound collected with the microphone 12 will be outputted to an earphone 24. That is, it will function as hearing aid (S1, S2).

[0040] On the other hand, when the message section 14 has recognized the arrival of a telephone in this condition, or when it has been recognized that it is going to carry out the telephone, the change-over section 18 switches to the message section 14 automatically from the hearing aid section 16. Thus, if switched, a sound will be collected with a microphone 12 and its voice will be transmitted through the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and the voice from a partner is outputted to an earphone 24 again. This condition is continued until a message is completed. That is, it will function as telephone (S3-S5). After a message is completed, the change-over section 18 switches to the hearing aid section 16 automatically from the message section 14. Therefore, it will function as hearing aid (S5, S6). The above processing is repeated until the power source of portable telephone is turned off (S7).

[0041] Therefore, in the usual condition that the power source is turned on, the portable telephone of this invention will function as hearing aid, and only when it is telephoning, it will function as telephone.

[0042]

[Effect of the Invention] The portable telephone with a hearing aid function concerning this invention will do the following effectiveness so for every claim.

[0043] Since its use effectiveness of telephone does not need to improve since invention according to claim 1 added the hearing aid function to assist a hearing impairment person to the portable telephone, and it is not necessary to take out a loud sound from the loudspeaker of telephone, the voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0044] Since invention according to claim 2 enabled it to switch a message means or a hearing aid means by the means for switching, it can switch a portable telephone to two functions by switching to a message means again at arbitration by switching to a hearing aid means using it as hearing aid to function as telephone. Moreover, since the use effectiveness of telephone does not need to improve and it is not necessary to take out a loud sound from the loudspeaker of telephone, the voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0045] By actuation which a hearing impairment person attaches an earphone and switches a message means or a hearing aid means by the means for switching in invention according to claim 3 As telephone which can catch a partner's voice through an earphone In being able to operate portable telephone now on the other hand as hearing aid which can catch external voice etc. through an earphone and making it function as telephone The voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0046] In invention according to claim 4, since a means for switching operates a message means automatically when you are going to telephone, or when a message is received, very user-friendly telephone can be realized.

---

[Translation done.]



\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

TECHNICAL FIELD

---

[Field of the Invention] This invention relates to a useful portable telephone with a hearing aid function especially at the old person to whom the lug stopped being able to be audible easily, and a hearing impairment person.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

PRIOR ART

---

[Description of the Prior Art] The spread of the facilities [ without choosing a location in recent years ] that it can talk over the telephone to portable telephones is remarkable. For this reason, development of a small lightweight portable telephone is furthered that it is easy to employ each company.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

EFFECT OF THE INVENTION

---

[Effect of the Invention] The portable telephone with a hearing aid function concerning this invention will do the following effectiveness so for every claim.

[0043] Since its use effectiveness of telephone does not need to improve since invention according to claim 1 added the hearing aid function to assist a hearing impairment person to the portable telephone, and it is not necessary to take out a loud sound from the loudspeaker of telephone, the voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0044] Since invention according to claim 2 enabled it to switch a message means or a hearing aid means by the means for switching, it can switch a portable telephone to two functions by switching to a message means again at arbitration by switching to a hearing aid means using it as hearing aid to function as telephone. Moreover, since the use effectiveness of telephone does not need to improve and it is not necessary to take out a loud sound from the loudspeaker of telephone, the voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0045] By actuation which a hearing impairment person attaches an earphone and switches a message means or a hearing aid means by the means for switching in invention according to claim 3 As telephone which can catch a partner's voice through an earphone In being able to operate portable telephone now on the other hand as hearing aid which can catch external voice etc. through an earphone and making it function as telephone The voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0046] In invention according to claim 4, since a means for switching operates a message means automatically when you are going to telephone, or when a message is received, very user-friendly telephone can be realized.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

TECHNICAL PROBLEM

---

[Problem(s) to be Solved by the Invention] However, since development of such each company is performed supposing the healthy person, it must be said that development of the portable telephone the old person who cannot hear a lug easily, and for hearing impairment persons is behind though regrettable.

[0004] In the portable telephone with which user-friendliness was developed for the healthy person so that often, it cannot be said that it is never easy to use for a hearing impairment person.

[0005] Although it is possible such for hearing impairment persons to enlarge sound volume of the loudspeaker of a portable telephone, only by only enlarging, privacy cannot be protected and it may also become others' trouble.

[0006] Near rapid increase of future old-man population is expected. Therefore, it can be said that development of the portable telephone the old person who cannot hear a lug easily, and for hearing impairment persons is pressing need.

[0007] So, in this invention, it prepares for future need, and even if it is a hearing impairment person, it aims at offer of a useful portable telephone.

---

[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

MEANS

---

[Means for Solving the Problem] In order to attain the above-mentioned purpose, it constitutes from this invention as follows.

[0009] Invention according to claim 1 is a portable telephone with a hearing aid function characterized by adding the hearing aid function to assist the portable telephone concerned with a hearing impairment person in the portable telephone in which the message with an other station is possible by wireless.

[0010] Thus, if a hearing aid function is added, the voice of the partner under message can be caught without making others trouble, and it will become possible to telephone completely like a healthy person.

[0011] Invention according to claim 2 is a portable telephone with a hearing-aid function characterized by to have the means for switching which chooses any of the message means as which the portable telephone concerned is operated as original telephone in the portable telephone in which the message with an other station is possible by wireless, the hearing-aid means as which the telephone concerned is operated as hearing aid with which a hearing impairment person is assisted, and the message means and the hearing-aid means concerned are operated.

[0012] If it is such a configuration, since a message means or a hearing aid means can be switched by the means for switching, a portable telephone can be switched to two functions by switching to a message means again at arbitration by switching to a hearing aid means using it as hearing aid to function as telephone.

[0013] Of course, the voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0014] Invention according to claim 3 is set to a portable telephone with a hearing aid function according to claim 2. Said message means In being chosen by said means for switching and being under message The sound signal and the received sound signal from the microphone built in said telephone are amplified. When it outputs to the loudspeaker or earphone built in the telephone concerned and said hearing aid means is chosen by said means for switching, it is characterized by being what amplifies the sound signal from the microphone concerned and is outputted to the earphone concerned.

[0015] By therefore, actuation which a hearing impairment person attaches an earphone and switches a message means or a hearing aid means by the means for switching As telephone which can catch a partner's voice through an earphone In being able to operate portable telephone now on the other hand as hearing aid which can catch external voice etc. through an earphone and making it function as telephone The voice of the partner under message can be caught without making others trouble, and it becomes possible to telephone completely like a healthy person.

[0016] Invention according to claim 4 is characterized by said means for switching being what is automatically switched to said message means from said hearing aid means, as said message means functions when arrival of the mail has been recognized, or when it is under message while switching so that said hearing aid means may usually be operated in a portable telephone with a hearing aid function according to claim 2.

[0017] Since a means for switching operates a message means automatically when you are going to

telephone, or when a message is received, very user-friendly telephone can be realized.

[0018]

[Embodiment of the Invention] Below, the operation gestalt of this invention is explained at a detail based on a drawing. Drawing 1 is the block diagram showing the outline configuration concerning the gestalt of operation of the 1st of the portable telephone with a hearing aid function of this invention.

[0019] The microphone 12 shared also when using for the body 10 of a portable telephone as telephone and using for it as hearing aid, the message section 14 which operates when making it function as telephone, and the hearing aid section 16 which operates when making it function as hearing aid are formed. It is switched by the change-over section 18 any of the message section 14 and the hearing aid section 16 are operated.

[0020] The sound-volume tone-quality controller 20 can adjust now the sound volume and tone quality of a loudspeaker 22 and an earphone 24 independently, respectively, and can choose the sound volume and tone quality which a hearing impairment person tends to catch. When using especially the portable telephone with a hearing aid function of this invention as hearing aid, a really required sound (human being's voice) is hard coming to catch the sound of all the frequency bands collected with the microphone 12 in bustle (for example, inside of the home of a station, or a big crossing) by having amplified uniformly. Therefore, no matter it may be what location, it is made for the sound of a 1000Hz - about 5000Hz band to become large, and enables it to adjust the sound of other bands so that it may become smaller than the sound of this frequency band so that conversation may be made easily.

[0021] When the message section 14 is functioning, volume control etc. is carried out by the sound-volume tone-quality controller 20, and the voice amplified in the message section 14 is outputted to a loudspeaker 22 or an earphone 24. In addition, if an earphone 24 is inserted in the condition that the message section 14 is functioning, voice will no longer be automatically outputted from a loudspeaker 22.

[0022] For example, in using telephone as hearing aid, it switches the change-over section 18 so that the hearing aid section 16 may function. Thus, if it switches, the sound collected with the microphone 12 will be inputted into the hearing aid section 16 through the change-over section 18, will be amplified here, and will be outputted to the sound-volume tone-quality controller 20. On the other hand, in using telephone as telephone, it switches the change-over section 18 so that the message section 14 may function. Thus, if it switches, a sound will be collected with a microphone 12 and its voice will be transmitted through the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and the voice from a partner is outputted to a loudspeaker 22 or an earphone 24.

[0023] Therefore, that what is necessary is just to switch the change-over section 18 so that the message section 16 may function, and to draw out the earphone 24 from the body 10 of telephone when a healthy person uses the portable telephone of this invention, when a hearing impairment person uses it conversely, actuation which attaches an earphone 24 and switches the change-over section 18 if needed must be carried out.

[0024] In addition, the change-over section 18 is formed in the body of telephone with the gestalt of a transfer switch, and a user may be made to switch it to arbitration if needed, and when the communications department 14 has recognized the arrival of a telephone, or when using telephone (when a call sound specifically sounds), you may make it switch it to the message section 18 from the hearing aid section 16 automatically (when for a key switch to specifically be operated). If it does in this way, user-friendliness will improve. Furthermore, the two above-mentioned functions are doubled and given as a function of the change-over section 18, and the switch for a manual automatic mode change-over which switches whether which function is used may be formed.

[0025] Drawing 2 is the block diagram showing the outline configuration concerning the gestalt of operation of the 2nd of the portable telephone with a hearing aid function of this invention. This portable telephone makes wireless between the body 10 of a portable telephone, and earphones 24.

[0026] With this block diagram, the point that the voice which formed the transmitting section 30 in the body 10 of a portable telephone, and was different at the point which has added receive section 24A to

the earphone 24 as compared with the block diagram of drawing 1, and was amplified by the change-over condition (switch the object for healthy persons and for hearing impairment persons) of the change-over section 18 is made to be outputted only to the transmitting section 30 only the loudspeaker 22 is different.

[0027] In using the telephone of such a configuration as hearing aid, while switching the change-over section 18 to the mode which a hearing impairment person uses, it switches so that the hearing aid section 16 may function. Thus, if it switches, it is inputted into the hearing aid section 16 through the change-over section 18, it is amplified here and outputted to the sound-volume tone-quality controller 20, and it will be transmitted towards an earphone 24 through the transmitting section 30, it will be received by receive section 24A, and the sound collected with the microphone 12 will be outputted to an earphone 24.

[0028] On the other hand, in using telephone as telephone, it switches the change-over section 18 so that the message section 14 may function. Thus, if it switches, a sound will be collected with a microphone 12 and its voice will be transmitted through the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and it is transmitted towards an earphone 24 through the transmitting section 30, it is received by receive section 24A, and the voice from a partner is outputted to an earphone 24 again.

[0029] therefore, when a healthy person uses this portable telephone While switching the change-over section 18 to the mode which a healthy person uses, when a hearing impairment person uses it conversely that what is necessary is just to switch so that the message section 14 may function While switching the change-over section 18 to the mode which a hearing impairment person uses, actuation which switches the change-over section 18 so that the hearing aid section 16 may function, and so that the message section 14 may function must be carried out if needed.

[0030] In addition, the switch whose change-over section 18 switches the mode for a healthy person and a hearing impairment person to the body of telephone, Two transfer switches of the transfer switch as which the message section 14 or the hearing aid section 16 is operated alternatively are prepared. When a user may be made to switch to arbitration if needed and it is switched to a hearing impairment person's mode When the communications department 14 has recognized the arrival of a telephone, or when using telephone (when a call sound specifically sounds), you may make it switch to the message section 18 from the hearing aid section 16 automatically (when for a key switch to specifically be operated). If it does in this way, user-friendliness will improve. Furthermore, the two above-mentioned functions are doubled and given as a function of the change-over section 18, and the switch for a manual automatic mode change-over which switches whether which function is used may be formed.

[0031] Drawing 3 is the block diagram showing the outline configuration concerning the gestalt of operation of the 2nd of the portable telephone with a hearing aid function of this invention. This portable telephone enables it to also carry out a message of a hearing impairment person through the message microphone (bone conduction microphone) built in the earphone while making wireless between the body 10 of a portable telephone, and earphones 24.

[0032] With this block diagram, the point that the voice which formed the transceiver section 35 in the body 10 of a portable telephone, and was different as compared with the block diagram of drawing 1 at the point which has add receive section 24A, transmitting section 24B, and message microphone 24C to the earphone 24, and was amplified by the change-over condition (switch the object for healthy persons and for hearing impairment persons) of the change-over section 18 is made to be output only to the transceiver section 35 only the loudspeaker 22 is different.

[0033] In using the telephone of such a configuration as hearing aid, while switching the change-over section 18 to the mode which a hearing impairment person uses, it switches so that the hearing aid section 16 may function. Thus, if it switches, it is inputted into the hearing aid section 16 through the change-over section 18, it is amplified here and outputted to the sound-volume tone-quality controller 20, and it will be transmitted towards an earphone 24 through the transceiver section 35, it will be received by receive section 24A, and the sound collected with the microphone 12 will be outputted to an earphone 24.

[0034] On the other hand, in using telephone as telephone, it switches the change-over section 18 so that the message section 14 may function. Thus, if it switches, a sound will be collected by message microphone (bone conduction microphone) 24C built in the earphone 24, and its voice will be transmitted through transmitting section 24B, the transceiver section 35, and the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and it is transmitted towards an earphone 24 through the transmitting section 30, it is received by receive section 24A, and the voice from a partner is outputted to an earphone 24 again.

[0035] therefore, when a healthy person uses this portable telephone While switching the change-over section 18 to the mode which a healthy person uses, when a hearing impairment person uses it conversely that what is necessary is just to switch so that the message section 16 may function While switching the change-over section 18 to the mode which a hearing impairment person uses, actuation which switches the change-over section 18 so that the hearing aid section 16 may function, and so that the message section 14 may function must be carried out if needed.

[0036] When are switched to the mode for hearing impairment persons in the case of this telephone, and using as telephone, the microphone 12 and loudspeaker 22 which are formed in the body 10 of a portable telephone are not used at all, but when switched to the mode for healthy persons, a microphone 12 and a loudspeaker 22 are used.

[0037] In addition, the switch whose change-over section 18 switches the mode for a healthy person and a hearing impairment person to the body of telephone, Two transfer switches of the transfer switch as which the message section 14 or the hearing aid section 16 is operated alternatively are prepared. When a user may be made to switch to arbitration if needed and it is switched to a hearing impairment person's mode When the communications department 14 has recognized the arrival of a telephone, or when using telephone (when a call sound specifically sounds), you may make it switch to the message section 18 from the hearing aid section 16 automatically (when for a key switch to specifically be operated). If it does in this way, user-friendliness will improve. Furthermore, the two above-mentioned functions are doubled and given as a function of the change-over section 18, and the switch for a manual automatic mode change-over which switches whether which function is used may be formed.

[0038] Drawing 4 is the case where the change-over section 18 is switched to the mode for hearing impairment persons, and although the change-over section 18 switches automatically the message section 14 and the hearing aid section 16 further, it is a flow chart which shows actuation.

[0039] When the arrival of a telephone has been recognized, or except when it is going to carry out the telephone, it switches so that the change-over section 18 may function the hearing aid section 16. Thus, if switched, the sound collected with the microphone 12 will be outputted to an earphone 24. That is, it will function as hearing aid (S1, S2).

[0040] On the other hand, when the message section 14 has recognized the arrival of a telephone in this condition, or when it has been recognized that it is going to carry out the telephone, the change-over section 18 switches to the message section 14 automatically from the hearing aid section 16. Thus, if switched, a sound will be collected with a microphone 12 and its voice will be transmitted through the message section 14. Moreover, it is amplified in the message section 14, volume control etc. is carried out by the sound-volume tone-quality controller 20, and the voice from a partner is outputted to an earphone 24 again. This condition is continued until a message is completed. That is, it will function as telephone (S3-S5). After a message is completed, the change-over section 18 switches to the hearing aid section 16 automatically from the message section 14. Therefore, it will function as hearing aid (S5, S6). The above processing is repeated until the power source of portable telephone is turned off (S7).

[0041] Therefore, in the usual condition that the power source is turned on, the portable telephone of this invention will function as hearing aid, and only when it is telephoning, it will function as telephone.

---

[Translation done.]



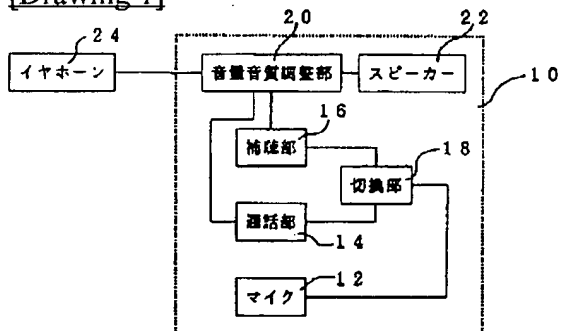
## \* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

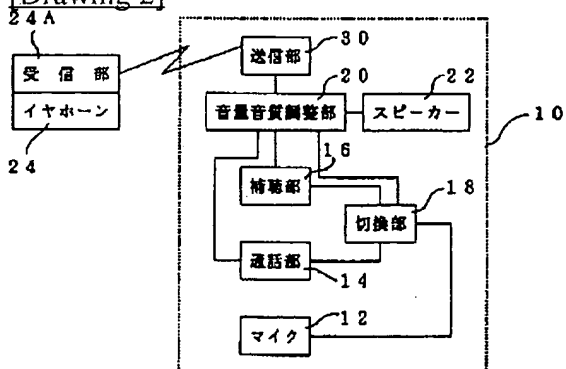
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

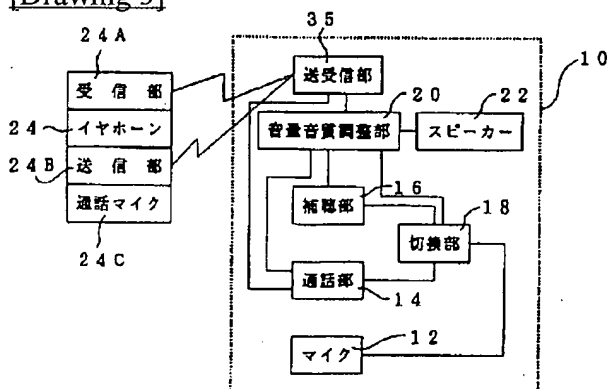
[Drawing 1]



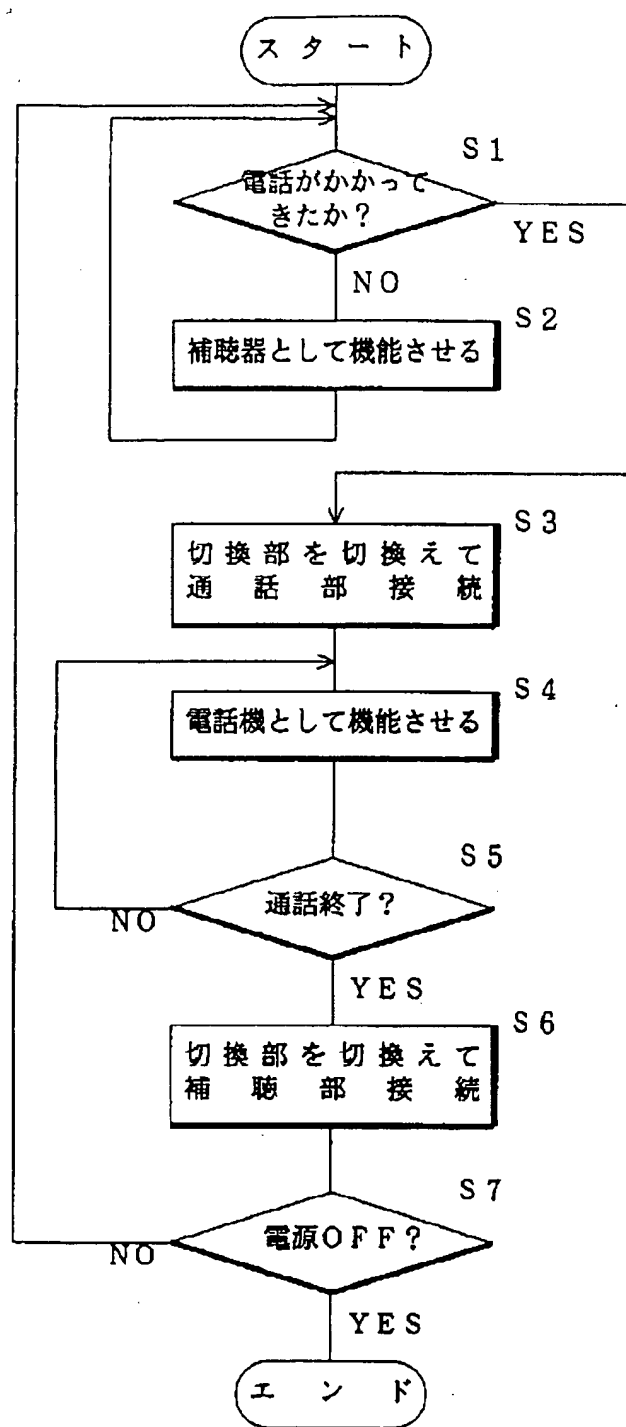
[Drawing 2]



[Drawing 3]



[Drawing 4]



[Translation done.]

\* NOTICES \*

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the 1st operation gestalt of the portable telephone with a hearing aid function concerning this invention.

[Drawing 2] It is the block diagram showing the 2nd operation gestalt of the portable telephone with a hearing aid function concerning this invention.

[Drawing 3] It is the block diagram showing the 3rd operation gestalt of the portable telephone with a hearing aid function concerning this invention.

[Drawing 4] It is the flow chart which shows typical actuation of the portable telephone with a hearing aid function concerning this invention.

[Description of Notations]

- 10 -- Body of a portable telephone,
- 12 -- Microphone,
- 14 -- Message section,
- 16 -- Hearing aid section,
- 18 -- Change-over section,
- 20 -- Sound-volume tone-quality controller,
- 22 -- Loudspeaker,
- 24 -- Earphone,
- 24A -- Receive section,
- 24B -- Transmitting section,
- 24C -- Message microphone,
- 30 -- Transmitting section,
- 35 -- Transceiver section.

---

[Translation done.]